What is claimed is:

1. A method of operating a liquefied natural gas facility, said method comprising the steps of:

(a) operating a heavies removal column in a start-up mode, said start-up mode including separating a predominantly methane stream into a first heavies stream and a first lights stream, said predominantly methane stream having a first inlet temperature during the start-up mode; and

(b) operating the heavies removal column in a normal mode, said normal mode including separating the predominantly methane stream into a second heavies stream and a second lights stream, said predominantly methane stream having a second inlet temperature during the normal mode, said second inlet temperature being warmer than the first inlet temperature.

2. The operating method of claim 1,

said second inlet temperature being at least 2° F warmer than said first inlet temperature.

3. The operating method of claim 1,

said second inlet temperature being at least 4° F warmer than said first inlet temperature.

4. The operating method of claim 1,

said second inlet temperature being in the range of from about 4 to about 12° F greater than the first inlet temperature.

5. The operating method of claim 1,

said predominantly methane stream entering the heavies removal column during the start-up mode having a first vapor/liquid hydrocarbon separation point $C_{X/(X+1)}$,

said predominantly methane stream entering the heavies removal column during the normal mode having a second vapor/liquid hydrocarbon separation point $C_{Y/(Y+1)}$,

wherein X and Y are integers representing the number of carbon atoms in the hydrocarbon molecules of the respective predominantly methane stream,

wherein Y is at least 1 greater than X.

6. The operating method of claim 5,

wherein X and Y are in the range of from 2 to 10.

7. The operating method of claim 5,

wherein X is in the range of from 3 to 5 and Y is in the range of from 5 to 7.

8. The operating method of claim 5,

wherein X is 4 and Y is 6.

9. The operating method of claim 1,

said heavies removal column being a refluxed heavies removal column.

10. The operating method of claim 9,

said heavies removal column including a feed inlet, a reflux inlet, and a stripping gas inlet,

said reflux inlet being spaced from and located above the feed and stripping gas inlets,

said feed inlet being spaced from and located above the stripping gas inlet.

11. The operating method of claim 10,

said heavies removal column including first and second sets of internal packing,

said first set of internal packing being vertically disposed between the feed inlet and the stripping gas inlet,

said second set of internal packing being vertically disposed between the feed inlet and the reflux inlet.

12. The operating method of claim 10; and

(c) prior to step (a), operating the heavies removal column in an initiating mode, said initiating mode including initiating the flow of the predominantly methane stream through the feed inlet and into the heavies removal column.

13. The operating method of claim 12,

said initiating mode including causing substantially no hydrocarbon-containing fluids to flow through the reflux inlet and into the heavies removal column.

14. The operating method of claim 10,

said start-up mode including discharging the first light stream from the heavies removal column and routing at least a portion of the discharged first lights stream to the reflux inlet.

15. The operating method of claim 14,

said normal mode including discharging the second lights stream from the heavies removal column and routing at least a portion of the discharged second lights stream to the reflux inlet.

16. The operating method of claim 1, and

(d) switching from the start-up mode to the normal mode by increasing the temperature of the predominantly methane stream entering the heavies removal column.

17. The operating method of claim 16, and

(e) upstream of the heavies removal column, cooling the natural gas stream in a first refrigeration cycle employing a first refrigerant comprising predominantly propane, propylene, ethane, ethylene, or carbon dioxide.

18. The operating method of claim 17,

step (d) including adjusting an operating parameter of the first refrigeration cycle to thereby cause an increase in the temperature of the natural gas stream entering the heavies removal column.

19. The operating method of claim 18,

said first refrigeration cycle including a first compressor for increasing the pressure of the first refrigerant,

step (d) including adjusting the first compressor to thereby cause a decrease in the differential pressure of the first refrigerant across the first compressor.

20. The operating method of claim 19,

said first compressor being an axial or centrifugal compressor,

step (d) including slowing down the rotation of the first compressor.

21. The operating method of claim 18,

said first refrigerant comprising predominantly ethane or ethylene.

22. The operating method of claim 21; and

(f) upstream of the first refrigeration cycle, cooling the predominantly methane stream in a second refrigeration cycle employing a second refrigerant comprising predominantly propane or propylene.

23. The operating method of claim 21; and

(g) downstream of the heavies removal column and during the normal mode, cooling at least a portion of the second lights stream in a third refrigeration cycle employing a third refrigerant comprising predominantly methane.

24. The operating method of claim 23,

said third refrigeration cycle being an open methane cycle.

25. The operating method of claim 1,

said liquefied natural gas facility employing cascade-type cooling via a plurality of refrigeration cycles employing different refrigerants.

26. The operating method of claim 1; and

(h) vaporizing liquefied natural gas produced by the liquefied natural gas facility during the normal mode.

27. A computer simulation process comprising the step of using a computer to simulate the method of claim 1.

28. A liquefied natural gas product produced via the process of claim 1.

29. A method of starting up a liquefied natural gas facility, said method comprising the steps of:

(a) introducing a first predominantly methane stream having a first vapor/liquid hydrocarbon separation point $C_{X/(X+1)}$ into a heavies removal column; and

(b) introducing a second predominantly methane stream having a second vapor/liquid hydrocarbon separation point $C_{Y/(Y+1)}$ to the heavies removal column,

wherein X and Y are integers representing the number of carbon atoms in the hydrocarbon molecules of the respective predominantly methane stream,

wherein Y is at least 1 greater than X.

30. The start-up method of claim 29,

wherein X and Y are in the range of from 2 to 10.

31. The start-up method of claim 29,

wherein X is in the range of from 3 to 5 and Y is in the range of from 5 to 7.

32. The start-up method of claim 29,

wherein Y is 2 greater than X.

33. The start-up method of claim 29,

wherein X is 4 and Y is 6.

34. The start-up method of claim 29,

said second predominantly methane stream being warmer than the first predominantly methane stream.

35. The start-up method of claim 29,

said second predominantly methane stream being at least 2° F warmer than the first predominantly methane stream.

36. The start-up method of claim 29,

said second predominantly methane stream being in the range of from about 4 to about 12° F warmer than the first predominantly methane stream.

37. The start-up method of claim 29,

said heavies removal column being a refluxed heavies removal column.

38. The start-up method of claim 37,

said heavies removal column including a feed inlet, a reflux inlet, and a stripping gas inlet,

said reflux inlet being spaced from and located above the feed and stripping gas inlets,

said feed inlet being spaced from and located above the stripping gas inlet.

39. The start-up method of claim 38,

said heavies removal column including first and second sets of internal packing,

said first set of internal packing being vertically disposed between the feed inlet and the stripping gas inlet,

said second set of internal packing being vertically disposed between the feed inlet and the reflux inlet.

40. The start-up method of claim 38; and

(c) prior to step (a) initiating the flow of the first predominantly methane stream through the feed inlet and into the heavies removal column.

41. The start-up method of claim 40,

step (c) being performed while substantially no hydrocarbon fluids are flowing into the heavies removal column through the reflux inlet,

steps (a) and (b) being performed while a hydrocarbon-containing fluid is flowing into the heavies removal column through the reflux inlet.

42. The start-up method of claim 38,

step (a) including separating the first predominantly methane stream into a first

heavies stream and a first lights stream and discharging the separated first heavies and lights streams from the heavies removal column,

step (b) including separating the second predominantly methane stream into a second heavies stream and a second lights stream and discharging the separated second heavies and lights streams from the heavies removal column.

43. The start-up method of claim 42,

step (a) including routing at least a portion of the discharged first lights stream to the reflux inlet.

44. The method of start-up in claim 43,

step (b) including routing at least a portion of the discharged second lights stream to the reflux inlet.

45. The start-up method of claim 29, and

(d) upstream of the heavies removal column, cooling the first and second predominantly methane streams in a first refrigeration cycle employing a first refrigerant comprising predominantly propane, propylene, ethane, ethylene, or carbon dioxide.

46. The start-up method of claim 45; and

(e) downstream of the heavies removal column, cooling the first and second predominantly methane streams in a second refrigeration cycle employing a second refrigerant comprising predominantly methane.

47. The start-up method of claim 46,

said second refrigeration cycle being an open methane cycle.

48. The start-up method of claim 46; and

(f) upstream of the first refrigeration cycle, cooling the first and second predominantly methane streams in a third refrigeration cycle employing a third refrigerant comprising predominantly propane or propylene, said first refrigerant comprising predominantly ethane or ethylene.

49. The start-up method of claim 29,

said liquefied natural gas facility employing cascade-type cooling via a plurality of refrigeration cycles employing different refrigerants.

50. The start-up method of claim 29; and

(g) vaporizing liquefied natural gas produced by the liquefied natural gas facility during step (b).

51. A computer simulation process comprising the step of using a computer to simulate the method of claim 29.

52. A liquefied natural gas product produced by the process of claim 29.

53. A method of starting up a cascade-type liquefied natural gas facility employing a refluxed heavies removal column between two refrigeration cycles of the facility, said method comprising the steps of:

(a) operating the refluxed heavies removal column in an initiating mode, said initiating mode including initiating the flow of a natural gas stream through a feed inlet of the refluxed heavies removal column and into the refluxed heavies column, said refluxed heavies removal column including a reflux inlet spaced from the feed inlet, said reflux inlet having substantially no hydrocarbon-containing fluids flowing therethrough and into the refluxed heavies removal column during operation in the initiating mode;

(b) subsequent to step (a), operating the refluxed heavies removal column in a start-up mode, said start-up mode including using the refluxed heavies removal column to separate the natural gas stream into a first heavies stream and a first lights stream, said start-up mode including discharging the first lights stream from the refluxed heavies removal column, said start-up mode including routing at least a portion of the discharged first lights stream to the reflux inlet; and

(c) subsequent to step (b), operating the refluxed heavies removal column in a normal mode, said normal mode including using the refluxed heavies removal column to separate the natural gas stream into a second heavies stream and a second lights stream, said normal mode including discharging the second lights stream from the refluxed heavies removal column, said normal mode including routing at least a portion of the discharged second lights stream to the reflux inlet.

54. The start-up method of claim 53,

said natural gas stream entering the refluxed heavies removal column at a first inlet temperature during the start-up mode,

said natural gas stream entering the refluxed heavies removal column at a second inlet temperature during the normal mode,

said second inlet temperature being at least 2° F greater than the first inlet temperature.

55. The start-up method of claim 54,

said second inlet temperature being in the range of from about 4 to about 12° F greater than the first inlet temperature.

56. The start-up method of claim 53,

said natural gas stream having a first vapor/liquid hydrocarbon separation point $C_{X/(X+1)}$ during the start-up mode,

said natural gas stream having a second vapor/liquid hydrocarbon separation point $C_{Y/(Y+1)}$ during the normal mode,

wherein X and Y are integers representing the number of carbon atoms in the hydrocarbon molecules of the respective natural gas stream,

wherein X and Y are in the range of from 2 to 10,

wherein X is at least 1 greater than Y.

57. The start-up method of claim 56,

wherein X is in the range of from 3 to 5 and Y is in the range of from 5 to 7.

58. The start-up method of claim 56,

wherein Y is at least 2 greater than X.

59. The start-up method of claim 56,

wherein X is 4 and Y is 6.

60. The start-up method of claim 53,

said refluxed heavies removal column including a stripping gas inlet,

said refluxed inlet being spaced from and located above the feed and stripping gas inlets,

said feed inlet being spaced from and located above the stripping gas inlet.

61. The start-up method of claim 60,

said heavies removal column including first and second sets of internal packing,

said first set of internal packing being vertically disposed between the feed inlet and the stripping gas inlet,

said second set of internal packing being vertically disposed between the feed inlet and the reflux inlet.

62. The start-up method of claim 53; and

(d) upstream of the refluxed heavies removal column, cooling the natural gas stream in a first refrigeration cycle employing a first compressor to compress a first refrigerant.

63. The start-up method of claim 62; and

(e) switching from the start-up mode to the normal mode by adjusting the differential pressure of the first refrigerant across the first compressor.

64. The start-up method of claim 63,

step (e) including decreasing the differential pressure of the first refrigerant across the first compressor.

65. The start-up method of claim 63,

said first refrigerant comprising predominantly propane, propylene, ethane, ethylene, or carbon dioxide.

66. The start-up method of claim 62; and

(f) downstream of the refluxed heavies removal column, cooling the natural gas stream in a second refrigeration cycle employing a second refrigerant comprising predominantly methane.

67. The start-up method of claim 66; and

(g) upstream of the first refrigeration cycle, cooling the natural gas stream in a third refrigeration cycle employing a third refrigerant comprising predominantly propane or propylene, said first refrigerant comprising predominantly ethane or ethylene.

68. The start-up method of claim 53; and

(h) vaporizing liquefied natural gas produced by the liquefied natural gas facility during the normal mode.

69. A computer simulation process comprising the step of using a computer to simulate the method of claim 53.

70. A liquefied natural gas product produced by the process of claim 53.